ONTARIO
FISH AND WILDLIFE
REVIEW

Vol. 2, No. 4

Winter, 1963

ONTARIO

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HON. A. KELSO ROBERTS Q.C., MINISTER

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THE COVER

Black bears are not sociable animals and normally avoid contact with humans at almost any cost. Their freedom and wild nature should be respected. See report on this species by N.D. Patrick. Our cover photograph of a black bear is by H.G. Lumsden.

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EDITORIAL

It seems only a matter of a few years ago that anyone who actively sought outdoor sports during the winter months was either very young or a faddist of some kind, and in either case was looked upon with grave suspicion by the steam heated members of the community to whom the outdoors was simply not habitable from October to May.

Happily, there has been a major change in the attitude of Canadians to their winter weather over the past few years. More and more people are discovering that the out-of-doors offers opportunities for healthy recreation during the winter months as great as those of the summer. The traditional winter sports of skiing and skating have increased tremendously in popularity in the past decade, and, in addition to this, activities which have been reserved for the summer months have increasingly been extended into the winter.

The most obvious of these is fishing. Ice fishing huts have appeared on the lakes of Ontario in tremendous numbers. Facilities range from heated huts equipped with electricity and T.V. to canvas windbreaks supported on poles. In any case, there is no question about the rapid expansion of this winter sport. The same may be said for hunting. Commercial pheasant farms provide quality hunting until the end of March each year. Even tent camping is finding its adherents during the winter months.

There are probably many reasons for this, among them the increased reliability of cars, improved roads, and improved clothing and equipment. The development of snowmobiles and ice scooters has made great areas of country accessible in the winter. Whatever the reasons may be, the tendency is a good one, from the point of view of the health and well-being of the Canadian people, and from the view of the rural economy. It is to be hoped that more people will discover the joys of the outdoor world in winter and benefit by the opportunity to see our country, not only in summer, but throughout the year.

BLACK BEAR

ARE BECOMING AN IMPORTANT BIG GAME ANIMAL

by N.D. Patrick

Fish and Wildlife Supervisor, Sault Ste. Marie Forest District

Picture in your mind, if you will, an isolated spot in Ontario's forests where a bubbling spring freshet pours down over the rocks to a medium sized lake. The evening light is fading, and with the early dusk of spring, schools of sleek, fat, black suckers are concentrated below and above each section of fast water. A round, awkward looking black animal, a female black bear, fresh from its long winter sleep, splashes and lumbers about catching fish, almost unmindful of her surroundings.

Silently, with a single flowing motion, the hunter rises from the dense cedar scrub on one side of the water and with a simultaneous movement draws bow to cheek and releases his arrow with a thrum of the bowstring. The bear jerks, stiffens, bites at the arrow buried in its side, and tumbles in an awkward gait into the underbrush — for a few seconds, perhaps, the crackling of brush can be heard over the roar of the water and then silence reigns.

This picture has two dates in history. For the first, the hunter is Indian, the year sometime in the 18th century or before, and white men from Europe are invading the wilderness of what is to become Ontario. Here we find the black bear occupying a position of considerable prestige in the lives of the natives. The spirits of all animals are revered to a degree (which varies from tribe to tribe) but, of all the wild animals of the Canadian scene, the black bear holds first rank. The Indian hunter undoubtedly had already advised the bear in advance that it was to be killed, and, once having made the kill, would apologize profusely for having found it necessary to do so. The head and other inedible parts would be hung well above ground, safe from visitations from less worthy animals. At almost any cost, the spirit of the bear was not to be offended.

Since the arrival of Europeans in the country, however, the status of black bears in the eyes of its major enemy, man, has changed considerably. Cursed for occasional depredation on livestock, crops, food caches, cabins or bee hives, the bear was relentlessly hunted until none were to be found in the major agricultural settlements of Ontario. Settlers of new areas and farmers on the edge of the agricultural lands, however, were not so successful in exterminating the beast, and so, looked upon as a nuisance animal, the bear became the subject of a bounty wherever agricultural operations were attempted.

History, however, has a tendency to repeat itself, and the status of the bear in Ontario is a good case in point. Hunted relentlessly, trapped, and dug out of winter dens without even the dignity of a special licence requirement or closed season, and followed by a ten-dollar bounty in many areas, the bear held its own and has staged a comeback in popularity. To-day, "Smokey" represents all wild animals in his crusade to help prevent forest fires. Tourist hunters come many miles to stalk the bear in its natural range in Ontario. Special licences are required, and the bounty has gone. Here now, we see the picture of the hunter at its second date in history. A few minor aspects have changed — the archery equipment is the product of man's latest

Typical entrance to a black bear's den near Kapuskasing. Photo by George Barna.

technology and the arrow passes right through the bear, but the motion, the heart pounding and, very likely, the quiet talking to the quarry are there once again.

But what of this lumbering, black buffoon of the woods? How much of our ideas about bears are based on fiction and how much on fact? Did the bear the neighbour killed last year really weigh 500 lbs? Let us take a look at the little information that is available.

First of all, our hunter picture has already helped to perpetuate a semi-truth about bears. While a bear that is feeding on a spring run of suckers makes an almost certain quarry (and evidence of one at a sucker run almost guarantees contact) bear in Ontario do not eat a great deal of fish, and the fishing activity often pictured is not common. Of 68 bear stomachs examined in north-eastern Ontario, only one contained fish, while 52 contained vegetation of some kind, including dandelion flowers, grass, tree buds, berries and oats. The bear's diet includes almost everything that could conceivably be called edible, and some strange items have been retrieved from bear stomachs – a bobby pin – tea bags with the paper labels still attached – a cigarette package complete with tinfoil.

To the hunter, though, several bear feeding habits are worth knowing. Firstly, if a bear can be found feeding on a fish run, it will likely return on subsequent nights and even subsequent years. Blood from fish, injured or dead and partly eaten fish, wet rocks or tracks, and bear droppings are all good signs. Bears usually visit fish runs in the evening. Secondly, green vegetation seems very attractive to bears when they first leave the winter den. Exposed, south-facing hillsides, railroad rights-of-way and secluded fields are all good places to find bears feeding in late evening in the spring. Bear baits, made up of carrion of nearly any kind (rotten fish, a dead horse, etc.) are attractive to bear from early summer on. Grass and shoots, however, seem to be preferred to carrion in early spring, and generally, during the spring bear hunt, it is best to hunt areas where green vegetation is available early in the season, and to hunt over baits of rotten meat later in the spring. Bears often feed at garbage dumps, and the dumps around many northern towns and and mining or lumbering camps frequently have bears as regular visitors.

It is generally agreed that bears mate in July, starting at about 3½ years of age, and that each female gives birth to cubs (from one to four) usually every second year. Apparently, the presence of cubs, which remain with the mother during the first summer and and winter, are considered to interfere with the sow mating during that season. Sows that lose their cubs early in the season may well mate and produce cubs on two successive years.

Bears grow very rapidly and make remarkable gains in weight in their first season. Cubs are usually born in mid-winter and weigh about a pound or less. They are "blind" at birth and remain with the sow in the den until spring. They have reached weights of from four to eight pounds by this time. They grow rapidly during the summer and may reach weights of from 40 to 70 pounds or more by fall. Yearlings range in weight from about 40 pounds (spring) to over 100 pounds (fall).

There is a considerable difference in weight between the sexes, the male bears growing to much greater sizes. The Records of North American Big Game (1958) ranks 52 black bears in trophy order, generally on the basis of size, and the only female is ranked No. 52. Of 111 brown bears, 81 grizzlies and the first 82 ranks of polar bears, none are recorded as females.

Some exceptionally large black bears have been recorded and there are a few records of weights over 600 pounds, but these are exceptional. The largest bear found in a two-year study in Swastika Forest District was a male of 355 pounds; from this study, it appeared that the average weight of females other than cubs was about 125 pounds. Only two of 26 females weighed were over 200 pounds, the largest being 226 pounds. It appears, then, that the hunter who bags a 300-or-more-pound bear has a big animal, well worth showing off. There are undoubtedly bears in Ontario larger than the 355-pound specimen referred to above but, apparently, the officially biggest bear is yet to be taken and weighed.* Captive bears often grow to very large size.

Bears are normally hunted by lying in wait over a feeding site during the spring season, although many are stalked in the open, grass covered areas of railroad tracks, bush roads and abandoned farms. Archers probably find their most suitable big game quarry in black bear since they can be fairly easily stalked or shot from blinds or hides. Most bears shot in the fall are taken in connection with deer hunting, and it is interesting to note that good deer hunting weather (cold with snow) produces fewer bears than does poor deer weather (warm and wet).

A few hunters in Ontario have taken to hunting bears with dogs, and this has proven to be a good method requiring a fine skill in handling dogs and the chase. A running, rollicking bear is no easy mark for a man with a rifle.

Trophies of the bear hunt include

**Since this was written, a black bear weighed at Timagami tipped the scales at an official 405 pounds, gross weight.*

A female black bear in her den. Photo by George Barna.

These black bear cubs, found near Parry Sound, still have their eyes closed.

the canine teeth and claws for key-chain souvenirs, a fine pelt that makes an excellent rug, and, of course, some excellent meat. Bear meat, properly prepared and of good quality, is excellent, and the roast from a yearling bear is easily mistaken for veal. The fat is quite strong, particularly on older animals, and adds considerably to the steaks for those who savour a strong gamey flavour, but it should be removed before cooking for less hardy and discerning diners.

Since the regulations for bear were changed in 1961 and the special bear hunting licence brought into effect, a marked change in the attitude toward bear has become noticeable. At one time, nearly every gas station in the north featured a live bear on a chain or in a pen to attract passing tourists, and the permits to keep them were easily obtained. Now, only bona fide zoos and public institutions or publicly sponsored establishments are able to obtain permits, and the unhappy "gas station" bear appears happily on its way to extinction, a development that most naturalists and sportsmen have welcomed.

Most people have an almost instinctive fear of the large carnivores, bear included, and this is a fortunate situation. While normal wild bears avoid contact with humans at almost any cost, and there have been few, if any, legitimate cases of humans being attacked by wild bears, discretion is the better part of valour. The half-tame bears that frequent some summer resort areas need to be treated with respect. Respect their freedom and their wild nature and have no fear. Teasing, enticing or cornering a half-tame bear is dangerous – a practice only of fools or half-wits.

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BOOK REVIEW

A NATURALIST IN ALASKA, by Adolph Murie, illustrated by Olaus J. Murie. Devin-Adair, N.Y., 1961, pp. 302. Price: $6.50.

Wildlifers remember Adolph Murie as the author of very important studies of wolves and coyotes, published by the United States National Park Service. His observations of these shy animals in the wild were unique. This book reminds us that they were recounted with unusual skill and charm.

During his years in Alaska, then, as now, an unsurpassed wilderness, full of life, Adolph Murie noted down from day to day an unique record of the daily lives and habits of wilderness dwellers, from the grizzly bear to the Toklat vole. Who has seen a lynx den? Who has watched the wolverine on his daily round? All this and much more, in a setting of great beauty, make this book a naturalists' classic. The bear stories, alone, are worth the price of the book. – C.H.D.C.

CANOE TRIP ACROSS THE MUSKEG

by John Macfie
Senior Conservation Officer, Parry Sound Forest District

The hard rock that dominates the familiar northern Ontario scene submerges, about 150 miles south of Hudson and James Bays, beneath flat-lying limestones of the same series as those in the agricultural south of the Province. Superimposed on this gently sloping plain is a deep mantle of glacial till and marine clay topped by muskeg, half water and half bog, supporting grotesquely stunted black spruce and tamarack trees, the product of poor drainage and the harsh Hudson Bay climate. The Great Muskeg is a sterile dismal place, yet this very quality gives it great value for it assures Ontario, as the earth's supply of wild land dwindles, of 50,000 square miles of perpetual wilderness.

In 1952, I crossed or, more accurately, passed through and somewhat beneath the muskeg by canoe. A large part of Ontario's rainwater drains north and east to Hudson and James Bays, crossing the muskeg in five major rivers: the Severn, Winisk, Attawapiskat, Albany and Moose. They cut deeply into the surface, penetrating as they near the sea into the limestone floor. Small side streams enter, but so flat is the land and so impervious to seepage is the permafrost and clay beneath the peat, that the effect of the sunken waterways on the wet plain is negligible.

Ours was a collecting expedition: Ross Moir, a botanist from Winnipeg; Henry and Ronald Cutfeet, a father and son team of Indian canoemen from Big Trout Lake; and I, representing the Department of Lands and Forests, made up the party. A Department aircraft provided transportation between Sioux Lookout and our starting and finishing points, and a grant-in-aid to Ross from the Arctic Institute paid for provisions, canoes and the Indians' wages. Our route was the Fawn River, a tributary of the Severn, and lower down, the Severn itself. We launched our two canoes (one powered by a 5 h.p. outboard motor, towing the other) in Big Trout Lake, 50 miles within the Precambrian Shield and 275 river miles from our objective, Hudson Bay. We left Big Trout on July 7, alternately travelled and camped for three or four days at each of six collecting stations, and emerged at the Cree Indian village of Fort Severn on August 7.

The Fawn tumbles over the edge of the Shield in about two dozen rapids and chutes crowded into the first 60 miles. The elder Cutfeet was chosen as guide because he had worked on the canoe brigades that brough Hudson's Bay Company supplies up from Fort Severn to Big Trout in the days before tractor and aeroplane freighting, and he knew the turbulent upper Fawn intimately. Crouched in the bow of the lead canoe, he read the water ahead and pointed the way for Ronald at the motor. Their paddles were long, narrow and pointed, chopped from dry spruce; they served as poles in shallow water and their soft, adhesive tips made them more sure than factory paddles for fending a canoe off boulders.

Ross and I followed willy-nilly in the second canoe at the end of a 50-foot rope. Only once, in a cross-current run, did we fail to maintain the neccessary upstream offset, and go broadside heavily on a boulder. Unaided by the frantic shouts from ahead, we somehow regained control; safely ashore, the canoe proved to be damaged less than was our pride by

Henry's indignant "not very good Indians, you!"

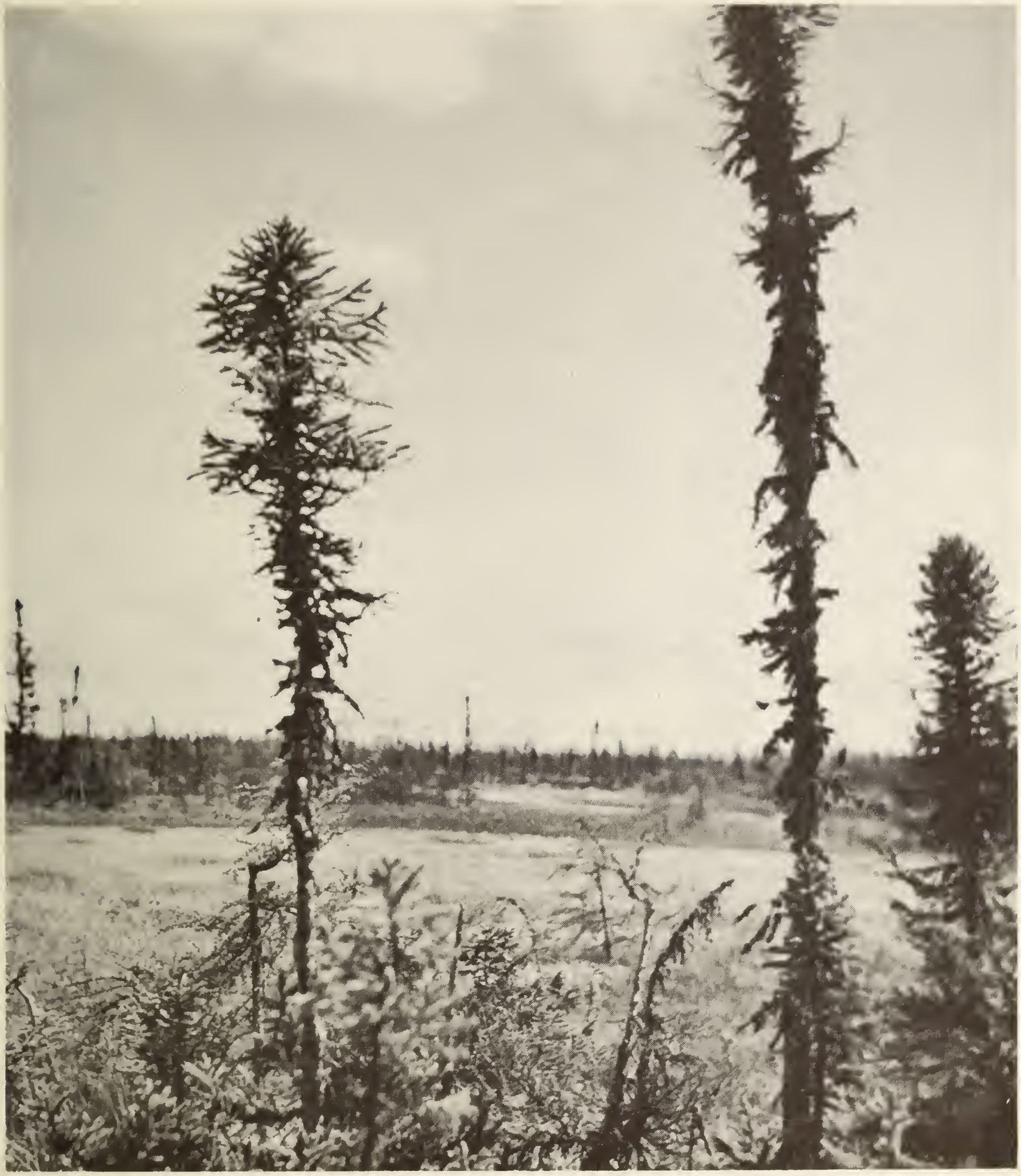
Where rapids were too risky for tandem descent, we plunged into the forest on a course Henry pointed with his chin, while he and Ronald took the canoes down one at a time. There were partial portages (where baggage had to be carried as much as a mile over obscure, boggy portages that were really only winter dog trails) while the canoes were run or tracked down. Canoes and all had to be portaged about ten times; at such places, even the rugged York boats (used for fur-trade freighting half a century earlier) had to be dragged overland, and the wide, levelled paths made for them hadn't yet been reclaimed by the forest.

Henry made it clear at the outset that he was "river boss", totally in charge on river and portage, and he executed his command disdainfully and with complete success. A feat of one-upmanship when the trip was only hours old firmly established this fact of our relationship. At the first portage, eager to prove we were not mere tourists, Ross and I carried heavy packsacks to the foot of the falls and were part way back before the Indians trotted by with the canoes. Crossing with second loads, we met Henry returning with my first load and only a broad smile in the way of an explanation. Ross and I puzzled over this seeming idiocy until we again met Henry at mid-portage, carrying the packsack top-loaded with one of our huge plywood boxes of canned goods, books and breakable articles, which we had thoughtfully fitted with rope handles on the assumption that portaging it would be a job for two men.

The Cutfeets were giants on the portage—Henry, small and barrel chested; Ronald, tall, slim and board-shouldered; yet they did not consider themselves so. When the subject came up, Henry spoke admiringly of others he had worked with, such as John Boyce, the Fort Hope Indian whom he watched carry 600 pounds of Hudson's Bay Company flour over a 150-yard portage.

It took us five days of travelling to descend to the edge of the Precambrian Shield, so we were almost gay on July 16 as we carried canoes and gear over the low, pink granite mounds at what Henry told us was "William Brown's" portage, the last hard rock we were to see. Back-breaking portages and wet weather had left little pleasure in the trip so far, and a crisis at the first collecting station had almost ended the expedition before it was a week old.

As the four of us slept in our crowded tent, a gasoline stove in Ross's plant drying flue, standing just outside, ignited its canvas canopy, destroying it and some specimens and equipment. Henry's terrified cries of alarm, which ring in my ears to this day, roused the rest of us in time to save our tent. Next morning, we took stock and concluded that plant-collecting could continue, but our intended departure toward Camp Two was thwarted by Henry's announcement that Ronald had a severe toothache and they would have to start for home the following day. Though Ronald clearly was not well, we suspected the near disaster with fire, something greatly feared by Indians in the bush, had made him want to be rid of us. But next morning and toothache was gone and our captain signalled that we would sail on by hoisting a canoe and jogging across the portage. Thereafter, each rapids we descended brought even greater relief than before, for it took the Cutfeets farther from home and us nearer to that edge of the rocky country from which point we would continue alone in one canoe if necessary. Our spirits, therefore, were high as the river curved



This is what Author Macfie means when he writes "Muskeg".

smoothly, though still swiftly, into the lowland, and clay banks rose beside us.

Typical of streams in level, deep-soiled country, the Fawn River meanders across the Hudson Bay lowland, abandoning old channels as it carves new ones in the flanking clay walls. As a consequence, opposite banks often are in sharp contrast—vertical, raw earth on one side and gently rising, well drained alluvial soil on the other.

On the latter sites, we saw white spruce, jack pine and aspen (which grew sparsely and stunted on the Precambrian upland behind us) suddenly attain a quality of form and dimension not expected at that latitude. A few balsams, not seen at all on the upper river, ap-

Henry Cutfeet makes a bannock.

peared among spruces, but only briefly. Jack pine, white birch and trembling aspen also were to drop from the ranks well before the river reached the sea.

More welcome was an increase, aided by the advancing season, in edible plants—such as strawberries, growing large and luscious in boulder pavements; arctic raspberries; and wild onions, hard to extract from baked clay but conveted by Ross and me, now craving green stuff. There were blueberries, too, but not yet ripe. Better growing conditions also added to Ross's plant collecting chores.

Looming above the Shangri-la of the Fawn valley, creeping to the very lip of steep cutbanks, is the muskeg. The river's influence ends only yards from the rim where shallow pools, separated by ragged, treed peat hummocks, create a pattern that repeats endlessly across the plain. The person entering the muskeg must check for his compass, for no tree or pond looks different from another, and the silent river and its fringe of tall trees are lost below the horizon.

The proportion of water, marsh and forest in the muskeg's make-up varies from region to region, but a fairly equal division of the three components prevails in the middle zone of the Fawn. Each unit of muskeg—a pool, perhaps an acre in size, underlain by ooze and permafrost, boardered by pale green marsh and a windrow of ice-shoved rotted vegetation—is a lively micro-world in summer. Sedges, arrow grass and

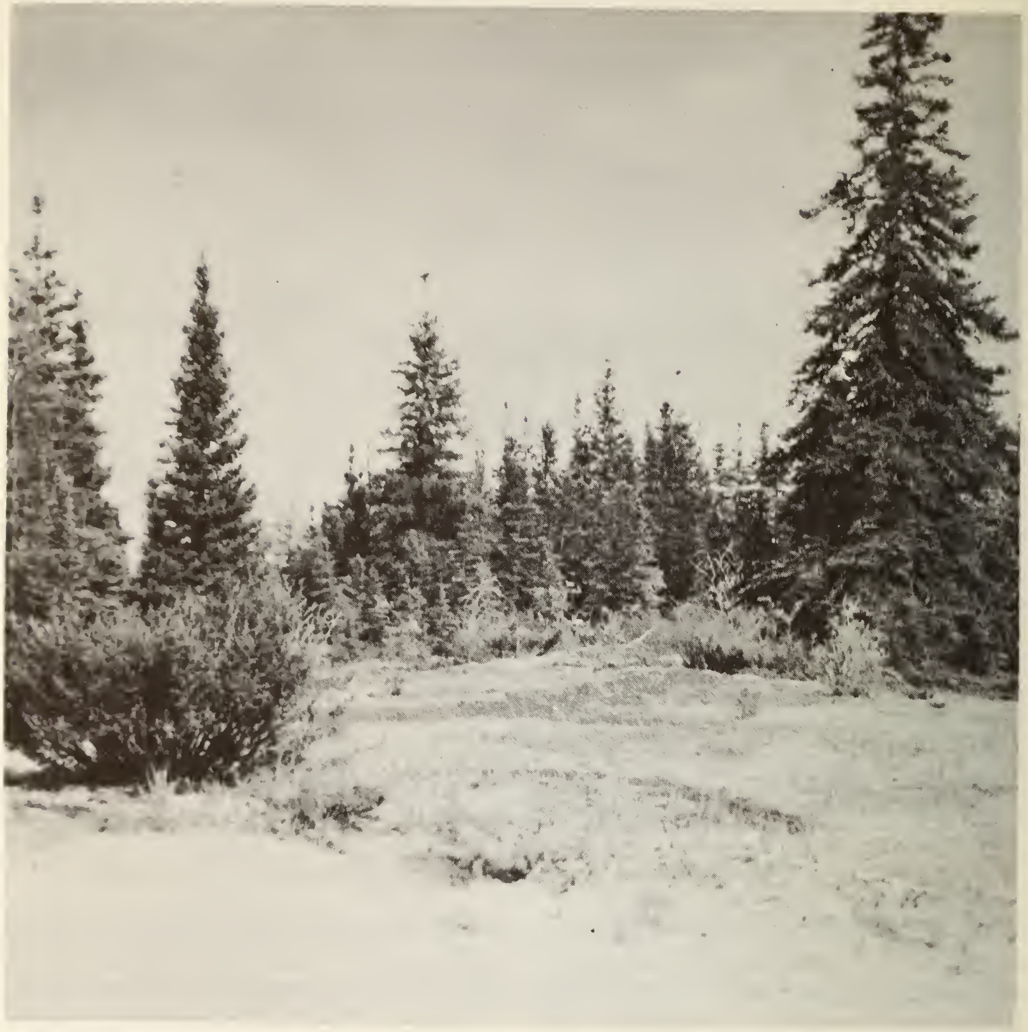
Author Macfie tries his luck on the Fawn River. (Snapped by Ross Moir)

buck bean emerge from the water; shapely pitcher plants grace spongy sphagnum; and moss and lichen of several hues brighten high places. Tamarack and spruce seedlings sprinkle the hummocks, and a forlorn few trees survive to maturity at ten or fifteen feet.

Animal life is abundant but largely insect. Except for the occasional shrilling of a yellowlegs and smaller bird noises, the muskeg is silent. Few ducks nest here—we saw only two or three broods of green-winged teal—but the Canada goose has wisely chosen the muskeg as one of his chief breeding grounds. Young Canada's, hatched on a mossy hummock, set out immediately on a trek that may take them a hundred miles to the shore of Hudson Bay before they attain flight. The goslings are led to the nearest stream, while still yellow balls of fluff, and begin drifting slowly down with the current. At our approach, groups of flightless geese left the water to hide, goslings flattening invisibly against buff-coloured clay, adults scrambling up to the forest floor.

Few mammals frequent the muskeg. Bog lemmings populate peat hummocks. Otters—this is the best otter producing region in Canada—cross it, journeying between streams; big-footed woodland caribou wander over it at will.

Down at river level, we camped, worked and travelled without mishap or hardship aside from perpetual dampness (rain fell on every day of one 12-day period) and four kinds of biting insects: mosquitos, black flies, deer flies and horse flies. I explored, collected bio-



Abandoned beach line, 40 miles from Hudson Bay; fox den in foreground.

logical material and did camp chores while Ross made his plant collections. Ronald spent two hours daily making two bannocks, measuring and carefully mixing the flour, lard, baking powder, raisins, salt and water, and watching over them lovingly as they baked crusty and fat in the frying pan tipped to face glowing coals. He also helped his father collect wood and snare rabbits which Henry always cooked for use with the heads on, ears protruding from the broth. Surplus rabbits were hung in the campfire smoke with our bacon. This treatment to combat mold added a delightful spruce smoke flavour to the bacon as the summer wore on.

Our rusted casting rod pulled in northern pike at a command, and in places walleyes bit well. The Fawn (as do nearly all streams entering Hudson Bay from Ontario) contains speckled trout but our inexpert efforts at the rapids on the upper river yielded only two or three. We were not to catch all the trout we wanted until we ascended Goose Creek from the coast on the second phase of the expedition. Fish and rabbits augmented our supplies to the extent that an inventory taken half way to Hudson Bay showed we were feeding ourselves for a dollar per day per man, and only sugar, tobacco (Henry's pipe burned continuously) and tinned meat, which we came to regard as banquet fare as we tired of country food, required rationing.

Problems in routine and our relationship with the Indians were ironed out by the time we established our third collecting station at Mink Creek, 120 miles from Big Trout, on July 22. Our guides had moved from the tent to sleep under flour sack mosquito bars, sheltered by a tarpaulin when it rained, where they felt free to talk far into the night and hold morning and evening devotions conducted by Henry from his travel-worn Cree syllabic prayer book. When camp chores permitted, they went off in a canoe or on foot to explore; from one of these trips, Henry returned triumphantly bearing a clump of large bracken ferns for Ross, the only specimens of the plant he was to collect on the expedition. A plant drying flue of squares of bark, peeled from the largest spruce Henry could find at each station, took the place of the destroyed canvas canopy, and a low, hardwood fire substituted effectively for the gas stove.

Six miles above the junction of the Fawn and Severn and sixty miles from Hudson Bay, we again looked down on white water, Caribou Rapids, but the portage was an easy path along limestone ledges paralleling the river. The Fawn had cut entirely through the overburden, and cutbanks rising abruptly more than 100 feet revealed it in complete cross-section. Clues to its history lay in its layers of glacial till, marine sediments and boulder pavements. We saw, many feet below the muskeg, the end of a buried tree trunk jutting from the clay; perhaps it was driftwood in Hudson Bay before the land, relieved of its heavy burden of ice, rose again above sea level.

In this region, a new feature appears in the muskeg—thin, parallel east-west lines—sandy beaches, abandoned centuries ago by the retreating sea. On these barely perceptible ridges, white spruces grow park-like; caribou trails groove the crisp, creamy lichen floor; and foxes make dens in the loose sand. But these are only slight interruptions in the bog, and stagnant water continues to dominate the landscape all the way down to the narrow band to tundra bordering the sea.

Our last interior collecting station was on white, ice-scoured limestone beside the Severn's White Seal Rapids; over this last portage of the summer, Ronald bore the heavy freighter canoe with appropriate speed. Work was not over when our canoes touched the foot of the tide-washed clay cliff, on which 280-year-old Fort Severn perches, for a coastal expedition was to take up the remainder of August, but the sight and sound of other people cheered us all. Ross and I were anxious for word from the world outside the muskeg, and the Cutfeets plainly had missed the company of other Indians.

Visiting Indians were rare at Fort Severn, so Henry had an attentive audience among the men of the village who spent many an hour lounging on the grass listening to him with grunts of comprehension. At the end of the summer, while we waited for the aircraft that would fly us south, a Severn Indian brought us unexpected good news. Henry, it seems, had boasted about his charges as outdoorsmen, describing Ross and me as being "just like Indians". The weeks since our misadventures on the other side of the muskeg had improved us, in the eyes of Henry Cutfeet, at least.

THE AFRICAN CATTLE EGRET FOUND NESTING IN ONTARIO

by O.E. Devitt
Southern Research Station, Maple

When a new species is introduced either accidently or deliberately into a new environment, either the animal finds conditions unfavourable and dies out in a short time or it becomes established and quickly multiplies to peak populations. In time, due to the evolvement of natural controls, it tends to level off to more moderate numbers.

As an example of the rate at which a foreign species from one continent can populate another, we have the recent case of the remarkable cattle egret from Africa. In what biologists describe as an "ornithological explosion", this Old World heron has spread rapidly northward from an original foothold secured along the coastal region of tropical South America in the late 1800's. How they got there in the first place remains a mystery. Dr. Emmet R. Blake (1939) who collected the first specimen for the Western Hemisphere in British Guiana in 1937 states: "One can only speculate upon the combination of natural factors which could have made possible the transatlantic passage of this African species." Over the next few years, reports enabled naturalists to trace this invasion through the West Indies, Florida and much of eastern United States and into Canada. At the present writing, there is no indication where the northern and western limits of this expansion are likely to be.

The cattle egret has a widespread distribution in Africa and comes into Europe only locally in southern Spain. Another race of this bird inhabits southern Asia.

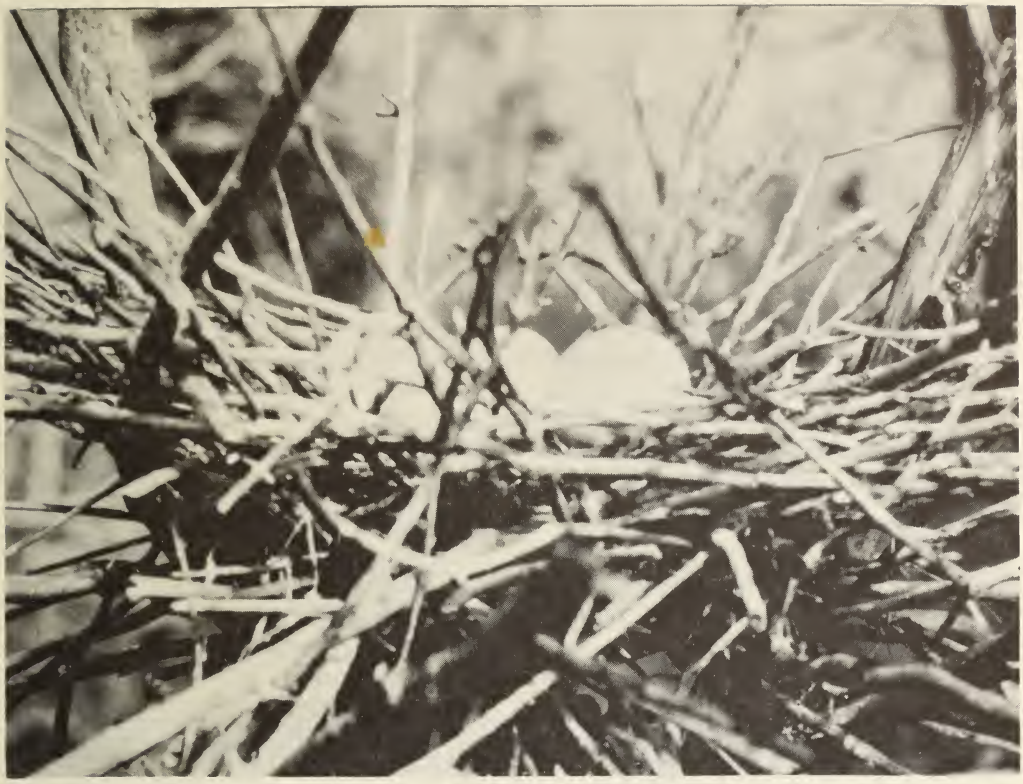
It is a medium sized heron and, from a distance, looks all white. It is stocky and about 20 inches long. The bill is stout, rather short, yellow or orange in the breeding season. The legs are pale yellow in spring, yellow or dusky in winter. Adults show buffish tufts on the crown and a buffish wash on the neck, breast and back. They are highly gregarious and roost and nest in colonies, often with other species of herons.

The cattle egrets' food habits are unique. They have a remarkable affinity for cattle and, as their name implies, associate closely with grazing cattle, feeding near the hoof or head of the animal. Insects disturbed by the cow are quickly snapped up by the egrets.

The first record for the mainland of Canada was on May 4, 1956, when a single bird was seen by Winona Stewart and Gladys Hutchinson near Port Rowan, Lake Erie (Baillie, 1960). Its occurrence aroused great interest among Ontario naturalists. Another turned up a short time later in the Dover Marsh near Lake St. Clair. Four years earlier in the autumn of 1952, a cattle egret flew aboard a fishing vessel some 300 miles at sea off the Grand Banks of Newfoundland. This bird was preserved and is now in the National Museum, Ottawa (Godfrey, 1954).

According to Royal Ontario Museum records, there have been 36 scattered Ontario sightings of cattle egrets from 1956 to August, 1963. Represented are such widely separated locations as Tilbury, Southampton, Haliburton and Iroquois in Dundas County.

New birds are occasionally added to the Ontario list—stragglers that wander across our borders—but new nesting species are few and far between. It is, therefore, an event of some importance when a new species is added to



Nest and eggs of the cattle egret at Luther Marsh, June 13, 1962. This is one of four nests which established the first nesting in Canada. Photo by O.E. Devitt.

the provincial list. To Udo Buerkle and Dan Mansell, two Ontario Agricultural College students engaged in summer biological studies for the Department of Lands and Forests, go the honour of finding the first nest of the cattle egret for Canada on June 4, 1962, at Luther Marsh in Wellington County. They have reported their discovery in a recent issue of the Auk, journal of the American Ornithologists' Union (Buerkle and Mansell, 1963).

Nine cattle egrets in breeding plumage were first discovered on a large island in the marsh in late May. Nesting was not suspected until five of these birds were seen in an established heronry of great blue, green and black-crowned night herons. Two occupied cattle egret nests, containing light blue egg, were found on June 4. Nine days

Cattle egret. Photo by Dr. D.R. Gunn.

later, a third nest, containing four eggs, was located, while a fourth nest, well on the way to completion but empty, was believed to belong to this species. It is regrettable that the initial nesting attempt at Luther Marsh was unsuccessful. The nests were broken up before the eggs had time to hatch. It is believed that the aggressive black-crowned night herons, which are numerous in the heronry, may have evicted the newcomers. By mid-July, the cattle egrets had left the marsh. We are glad to learn, however, that another pair of these birds nested successfully at Presqu'ile Provincial Park where two young were reared to maturity during the summer of 1962.

Undoubtedly, this colourful heron will become a regular breeding species in Ontario. Other nesting attempts will be made in the future. Let us hope that this welcome addition to our avifauna will be more successful next time.

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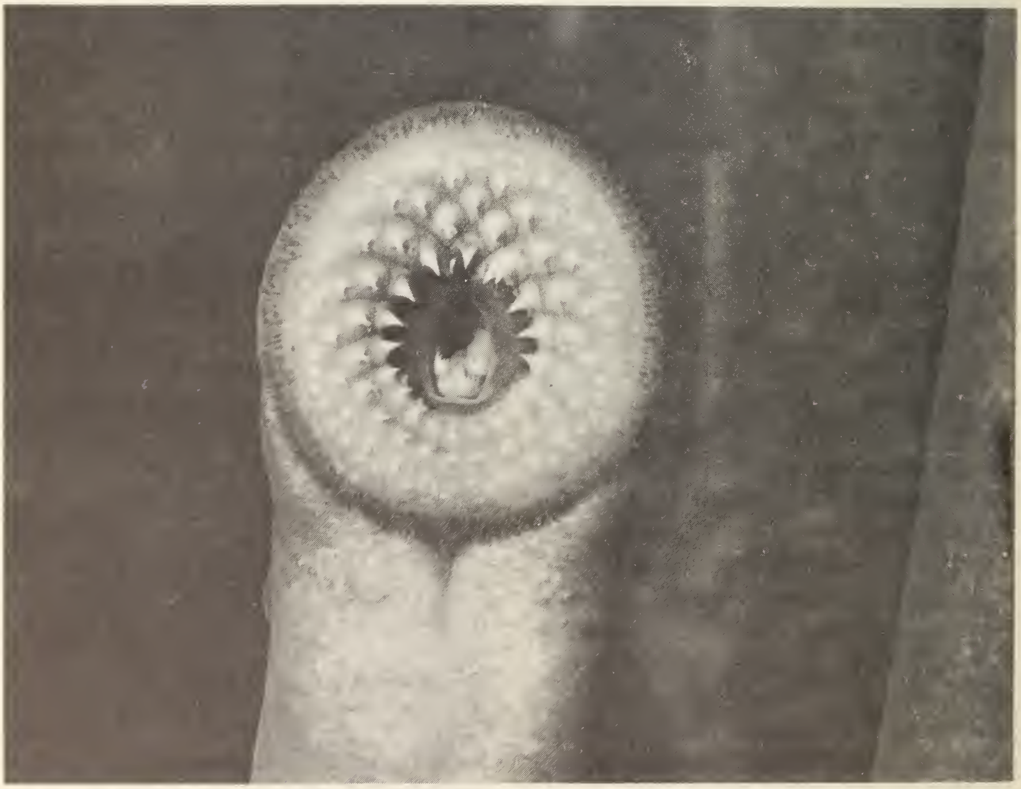


Note the tooth-studded tongue in the circular mouth of the sea lamprey.

A SURFEIT OF LAMPREYS

by R.W. McCauley
Southern Research Station, Maple

The sea lamprey would seem to be a rare animal in the Great Lakes. The average citizen has probably never seen one alive. This rarity is deceptive for the population of this predator is large enough to have ruined the commercial fisheries of the Upper Great Lakes. It has an expensive taste in fish and its feeding habits are rather extravagant. It seems to favour the commercially valuable lake trout and feasts wastefully upon its prey by sucking blood and body fluids. Although the fish is deprived of only a small fraction of its body weight, this fraction is vital and its loss may result in the death of the fish. A relatively large number of fish is required to grow a quarter-pound lamprey on such a liquid diet.

The lamprey is well provided by nature to puncture the body of a fish and extract blood and body juices. Unlike a true fish, it has no jaws for grabbing and biting. In their place is a tooth-studded funnel which serves as a suction cup to secure the lamprey to its slippery prey. Once firmly attached to the unwilling host, the lamprey rasps through the body wall with the aid of its tooth-studded tongue, conveniently situated in the centre of the oral funnel. The duration of feeding depends on a number of things including the size of the fish, the appetite of the lamprey and the size of the lamprey. It is often caught in the act of feeding by fishermen when removing fish from their nets. In localities where populations of lamprey are relatively dense, they often are found attached to boats and floating objects.

Lamprey may be seen in large numbers in the spring of the year, ascending rivers and streams on the way to their spawning grounds. After a month or so in the stream, male and female pair off and construct "nests" in gravel by rearranging the stones on the creek bed to form circular depressions about one or two feet in diameter. During spawning, upwards of 60,000 eggs are deposited between the stones of the nest. Probably only a small portion of these will hatch.

The young lamprey which emerge, known as ammocoetes or larvae, leave the nest after several days and burrow

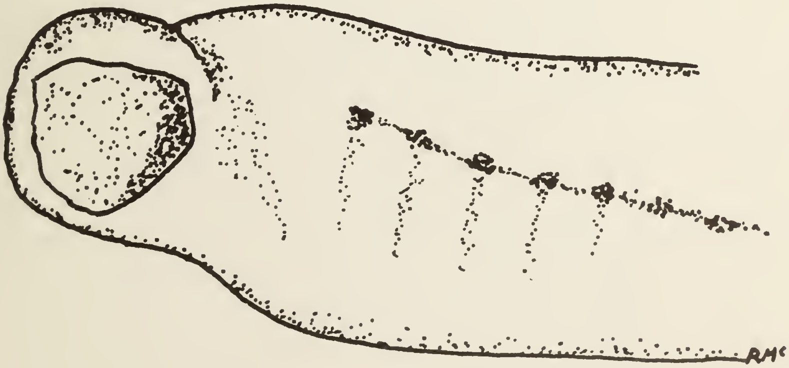
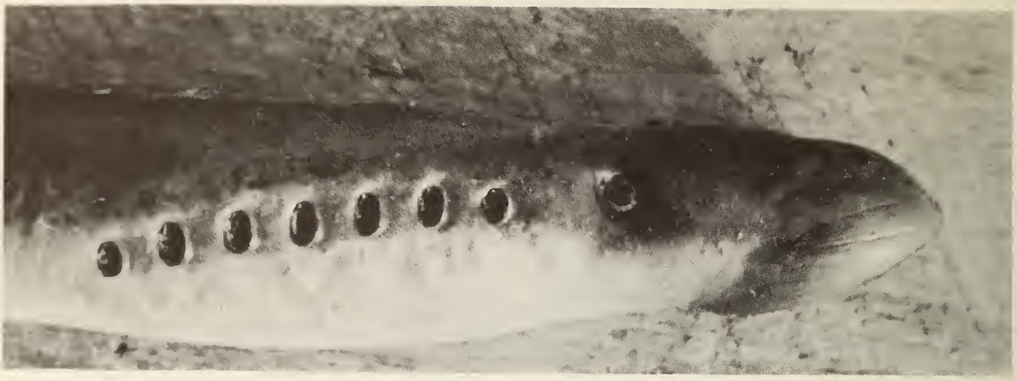


Fig. 1. A view of the head region of a sea lamprey larva as seen from the side and below. Note the fleshy mouth and the absence of eyes.



Close-up of sea lamprey showing seven gill slits. Photo by T. Jenkins.

A catch of sea lamprey, unappetizing perhaps but edible. Photo by T. Jenkins.

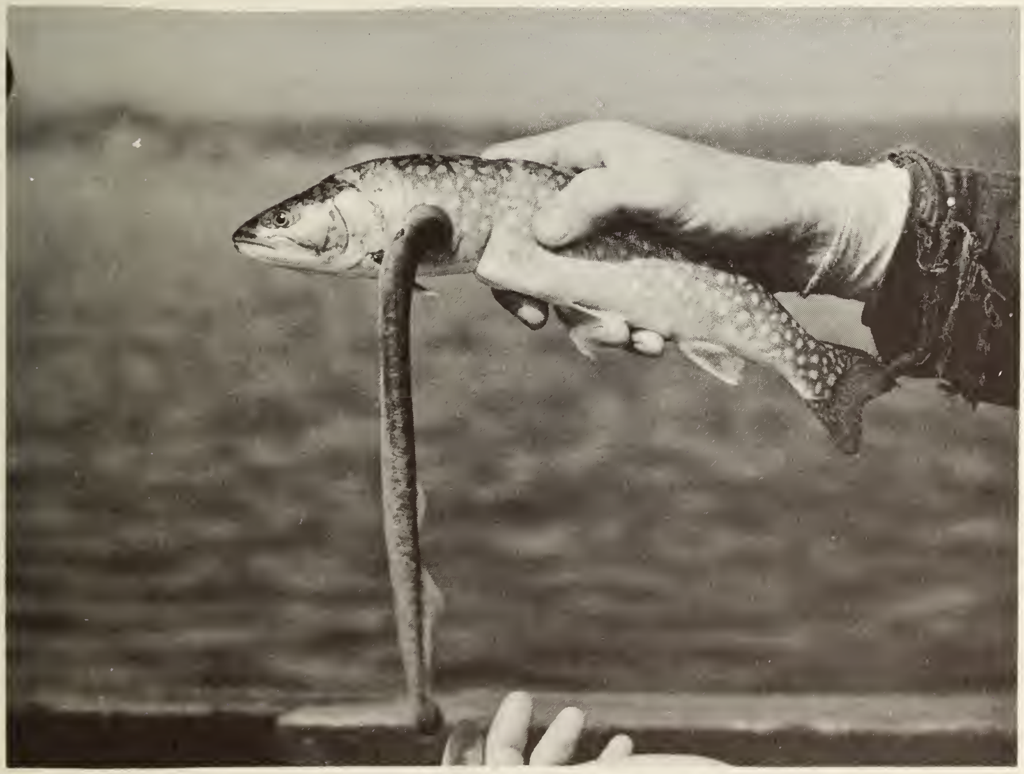
into the soft bottom of the stream bed. For the next four or five years (again, the time involved is not certain), they lead an existence completely different to that of the rapacious adult. In fact, the larval period of the lamprey's life might be considered the "Dr. Jekyll" phase of its Jekyll and Hyde existence. During its life in the mud of the stream bottom, it is blind and feeds inoffensively on microscopic organisms which it strains from the water. On occasions, it leaves the safety of its burrow to seek better feeding grounds and at this time presents a tempting morsel to to hungry stream fishes.

After five years or so of such a secretive existence, the larva manages to reach the size and thickness of a seven-inch lead pencil. At this time, dramatic changes occur, reminiscent of the effects of the potion on Stevenson's benevolent Dr. Jekyll. The flabby, horseshoe-shaped mouth is replaced by the toothed, oral funnel containing the wicked, rasping tongue. Well formed eyes appear in the head, and the lamprey assumes the dark dorsal surface and silver belly befitting a fish of the open water. After this metamorphosis, it leaves the mud for the last time and migrates into the open lake in search of food more nourishing than microscopic organisms. After one to one and a half years of dining on fish body fluids, the lamprey reaches full adult length which in the Great Lakes is, on the average, sixteen inches. With the coming of spring, the adults again migrate into the streams to spawn, thus completing their life cycle.

Some of the close relatives of the sea lamprey have abandoned the predaceous adult life so destructive of fish. The American brook lamprey, for example, whose larvae are almost indistinguishable from those of the sea lamprey, undergoes metamorphosis and develops eyes and a tooth-studded oral funnel. This equipment is not used, however, to attack fish but rather as a means of attachment to stones in the stream. Such harmless species do not feed during adult existence but draw upon fat stored during larval existence. For this reason, the sexually mature, non-parasitic adults are pygmies compared to the adults of the parasitic forms.

The present over abundance of sea lamprey in the Great Lakes has been caused by the invasion in recent times of the land-locked lamprey of Lake Ontario into the four upper lakes. Originally, the land-locked sea lamprey was confined to Lake Ontario but the by-passing of Niagara Falls by the Welland canal system permitted them entry to Lake Erie. Once established in Lake Erie, the way to further colonization of the virgin waters of the Upper Great Lakes became a matter of time. The first specimen in Lake Erie was collected in 1921, but it was not until the Forties that the effects on the populations of fish in the Upper Great Lakes were felt.

The need to eradicate or control the sea lamprey inspired research into its life history to find that link in the life cycle which could be attacked most easily and effectively. At first,



Splake, with sea lamprey firmly attached. Photo by R. Muckleston.

this link seemed to be the spawning migration for at this time the adults are concentrated in the streams. By killing a female lamprey, some 60.000 eggs would be destroyed. Even if the lamprey were kept from their spawning grounds, the same effect would be achieved. Fortunately, only a small percentage of the streams flowing into the Upper Great Lakes seemed to be suitable for the spawning of lamprey, and a plan to block the migration of lamprey by electrical and mechanical barriers was set up. For several years, the number of lamprey caught in the barriers increased each year in spite of the control measures. It was apparent that enough lamprey reached the spawning grounds to maintain the population of lamprey in the lakes.

Luckily, at the same time barriers were being constructed, chemicals were discovered which, when applied in a stream in low concentrations, kill the larvae without harming populations of game fish. These are called larvicides. A new type of control program was begun in streams containing larval lamprey with these selective larvicides. Some of the electrical barriers were kept in operation not as a means of control but rather as an indicator of the numbers of lamprey in the lake. At present, the harvest of spawning lamprey in the barriers has fallen to 14 per cent of the 1961 catch — an indication that the larvicide treatments are effective.

The "surfeit of lampreys" in the Great Lakes is a problem peculiar to North America. In Europe and Asia, lamprey are prized as a delicacy and, indeed, in Europe it is a matter of concern that the lamprey fisheries are declining, presumably due to pollution of their breeding grounds. The lamprey of commerce in Europe is the river lamprey, (*Lampetra fluviatilis*). This species, although parasitic on fish in the Baltic and North Sea, has no noticeable, harmful effects on populations of commercial fish. The sea lamprey is also present in Europe but is so scarce that few serious lamprey fisheries exist.

It has been suggested that fishing for the land-locked sea lamprey of the Great Lakes be encouraged as a means to control its numbers. Surely some use could be found, the argument runs, for this fish-like creature which has fed on the finest of fish food. Actually, sea lamprey are fished in Ontario and command a good price on the Toronto market. So far, the market (supplied by one lamprey fisherman) is not satiated. However, only a few of the tributary streams of the Great Lakes support lamprey runs large enough to make fishing economically profitable. The great majority of streams in which fishing would be unprofitable could, however, supply enough larvae to maintain a large population of adults in the lake.

The sea lamprey will probably be always with us since it has displayed an unusual adaptability in invading new habitats. It is to be hoped that the control measures developed by man and the checks provided by nature will keep the lamprey population at a low level and that the lamprey's share of fish will be insignificant in the future.

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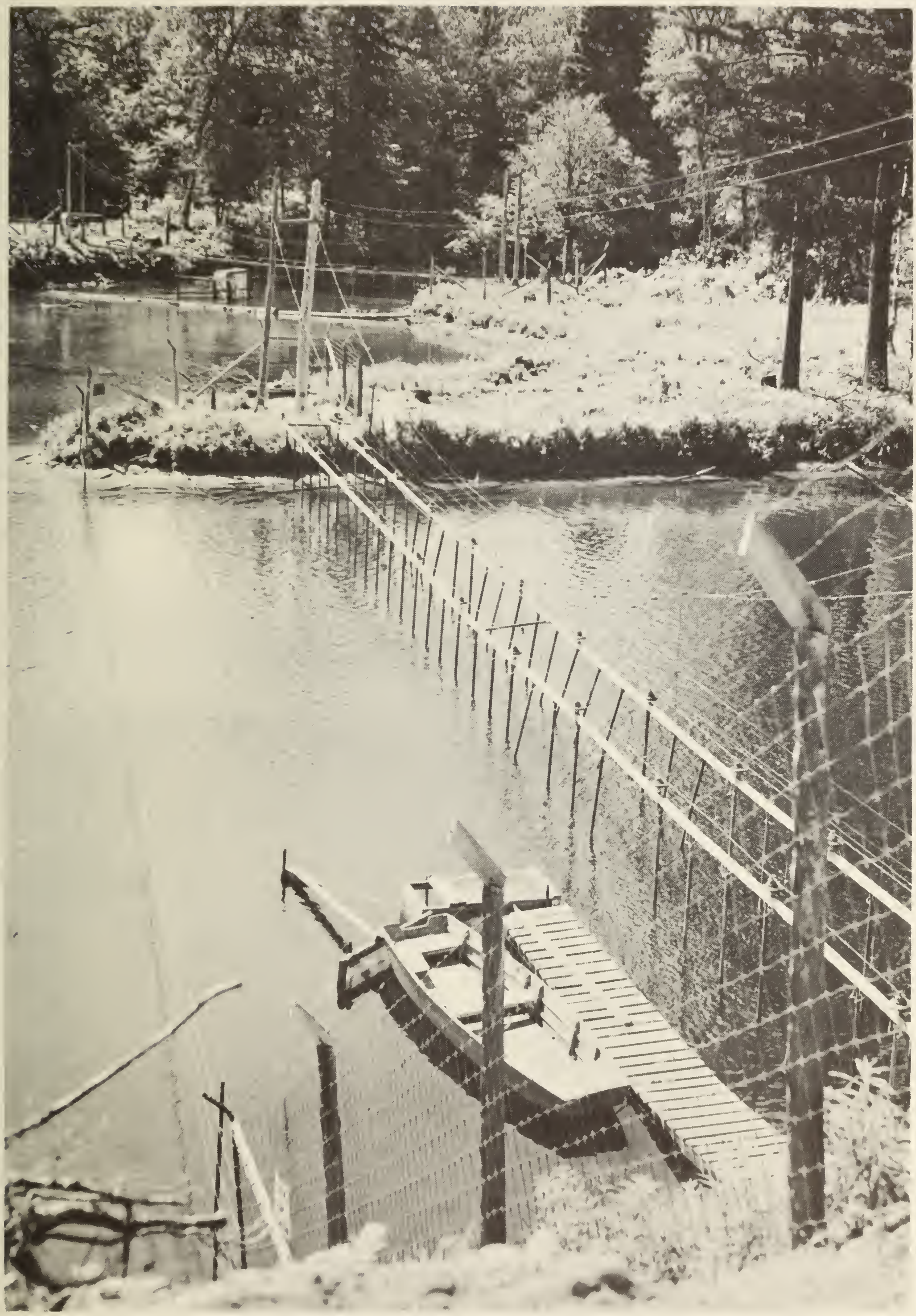

An electrical barrier of the type originally used to block the migration of adult sea lamprey. Photo by R. Muckleston.